DEPARTMENT OF THE ARMY MRD-R 1110-1-9
Missouri River Division, Corps of Engineers
P.O. Box 103, Downtown Station
MRDED-G Omaha, Nebraska 68101
Regulation
No. 1110-1-9 30 September 1982

Engineering and Design
CONTROL OF FIELD TESTING PROCEDURES

1. Purpose. This regulation prescribes the procedures for determining the adequacy of testing performed by or for District Offices serviced by the Missouri River Division Laboratory (MRDED-L); Kansas City, Omaha, Rock Island, and St. Paul.

2. Applicability. This regulation is applicable in its entirety to the Omaha and Kansas City Districts and to other districts serviced by MRDED-L as a matter of information and coordination. It applies to both civil and military construction. It covers inspection of the following types of testing facilities:

a. For construction materials.

(1) District and project laboratories operated by the Government for quality assurance testing.

(2) Project facilities operated by a construction contractor for quality control testing.

(3) Commercial laboratories hired either by the Government or the contractor.

b. For water/environmental analysis.

(1) Laboratories operated by the District, fixed or mobile.

(2) Commercial or university laboratories.

(3) Laboratories operated by other Government agencies.

3. References.

a. ER 1110-1-261 - Control of Field Testing Procedures.

b. ER 1110-1-8100 - Lab Investigations and Materials Testing.

c. ASTM E 329 - Inspection and Testing Agencies

d. ETL 1110-2-244 - Water and Wastewater Laboratory Quality Control.

e. ETL 1110-1-268 - Water and Wastewater Laboratory Inspections.

4. Definitions. Definition of terms used herein are contained in References 3b and 3c.

5. Responsibilities.

a. Request for inspections. Reference 3a assigns the District Commander the responsibility of assuring that all laboratories performing materials testing and water/environmental analysis are capable of performing the work required. This is to be accomplished by inspections performed by MRDED-L. The District Commander is responsible for requesting these inspections.

b. Performing inspections. Reference 3b assigns to Division laboratories the responsibility of technical supervision of all laboratories providing testing services to the District. This is to be accomplished by inspecting such laboratories when requested by the District.

6. Basis of Inspection. Testing facilities will be inspected for the ability to comply with the specific test methods stated in the contract or contracts under which the testing services are provided. Inspection for compliance with specific test methods is essential because a single test may be performed by several different methods. For example, the tests for the liquid and plastic limit of soils may comply with ASTM, AASHTO, EM 1110-2-1906, or MIL-STD-621B methods, each of which differs in details of procedure and may produce considerably different results. Therefore, contracts must state clearly the test methods required, and the test methods must be known to the inspector in order to determine compliance.

7. Scheduling Inspections.

a. Construction Materials.

(1) District Coordinator. Each District Commander will designate a laboratory inspection coordinator for construction materials. The coordinator will be the contact between the District and MRDED-L for all matters connected with Inspection of field materials testing activities. More than one coordinator may be designated, but overlapping responsibility should be avoided. MRDED-L will be furnished, in writing, the name of the coordinator(s).

(2) Frequency of inspection. Reference 3a requires that each testing facility be inspected:

(a) Prior to initiation of testing. This inspection should be timed to insure that necessary equipment and personnel are on hand.

(b) Every two years if the laboratory is used on a generally continuous basis. Reinspection at a shorter interval may be necessary if there is a major change in the type of project, which requires significantly different test methods or volume of tests performed.

(c) Whenever it appears that current conditions are unsatisfactory.

(3) Planning inspections.

(a) To facilitate planning by MRDED-L, a schedule of anticipated inspections will be submitted semi-annually to the Director, MRDED-L, on 1 April and 1 October. The schedule will list each testing facility to be inspected, together with the contract number or numbers for which services will be performed. Contracts that will start during the 6-month period, but for which the testing facility has not yet been designated or set-up, should also be listed. The schedule will include an appropriate desired date of inspection for each testing facility or contract. Ideally, inspections should be performed after each testing facility is designated or set up, and before a large proportion of the testing has been done. This usually occurs when a contract is between 5 and 20 percent complete. The semi-annual schedule should be supplemented (by letter or phone) as necessary to cover situations not predictable six months in advance. RCS MRDED-G-1 applies to this information requirement.

(b) MRDED-L will group the inspections to keep travel costs to a minimum. Each inspection trip will be discussed with the District Coordinator before it is made to insure that information is current.

b. Water/Environmental Analysis**.**

(1) District Coordinator. Each District Commander will designate a laboratory inspection coordinator for water/environmental material testing. The coordinator will be the contact between the District and MRDED-L for all matters connected with inspection of facilities testing water/environmental materials.

(2) Frequency of inspection.

(a) Reference 3d recommends that inspections be held prior to awarding a contract for testing.

(b) Reference 3a requires that testing facilities be inspected prior to initiation of testing. This inspection should be timed to insure that necessary equipment and personnel are on hand. Also, inspections should be made every two years if the laboratory is used on a generally continuous basis. Reinspection at a shorter interval may be necessary if there is a major change in the type of tests performed. Additionally, testing facilities should be inspected whenever current conditions appear to be unsatisfactory.

(3) Planning inspections. Inspections should be requested by letter with as much advance notice as possible. A copy of the contract, or a list of the tests and methods for each laboratory should accompany the request. A schedule of anticipated inspections will be submitted semi-annually to the Director, MRDED-L on l April and 1 October.

8. Funding.

a. The District will be billed by MRDED-L for the actual cost of each inspection performed. For estimating purposes, call MRDED-L for cost of recent inspections.

b. Blanket cost codes may be furnished with the semi-annual list for laboratory inspections, or individual inspections may be requested on Forms DD 1222, DA 2544 or by other appropriate means.

9. Inspection Procedures.

a. Coordination. In some cases, commercial laboratories near the Division borders are inspected by the neighboring Division Laboratory. If a recent inspection for similar work has been performed, time and money will be saved by using the existing information. In these cases, MRDED-L will obtain copies of the inspection report and determine the adequacy of that inspection.

b. Notifying labs to be inspected. For materials testing laboratories located on the site, either Government or contractor-operated, the District coordinator will make the arrangements. For water/environmental analysis laboratories, the District coordinator will make arrangements for inspection of Government and university laboratories. In all cases, commercial laboratories will be contacted directly by MRDED-L.

c. Inspection. Appendix A contains a detailed outline of the procedure generally followed in conducting the inspection of a materials testing laboratory. This is included for the benefit of District personnel accompanying the inspector, and to assist in interpreting the report of inspection.

d. Participation. It is desirable that a representative of the District be present during the inspection. However, this is optional with the District.

10. Reporting Procedure. The following procedure applies to testing facilities for both construction materials and water/environmental analysis, except where specifically stated otherwise. A formal report will be prepared by MRDED-L for each separate testing facility.

a. Content of reports. Reports will contain:

(1) Brief background information on the organization.

(2) Qualifications of the individual in charge and key testing personnel.

(3) Availability of required reference material.

(4) A list of the test procedures and equipment inspected.

(5) A list of the deficiencies noted. Major deficiencies will be identified in the report. A major deficiency is defined as one having an appreciable effect on the value or reliability of a test result.

(6) An evaluation by the inspector of the ability of a testing facility to provide the services required in an acceptable manner.

b. Distribution of Reports.

(1) Construction materials.

(a) Kansas City and Omaha Districts. Inspection reports will be forwarded thru MRDCO to the District Construction Division. The District Construction Division is expected to forward reports through the Area or Resident Engineer to the laboratory for correction of deficiencies. For commercial laboratories only, an information copy will be sent directly from MRDED-L to the laboratory. This copy will be sent out two weeks after the reports to the District, and is an information copy only. It will not be accompanied by instructions of any kind.

(b) Rock Island and St. Paul Districts. Inspection reports will be addressed to the District coordinator for distribution. For commercial laboratories only, an information copy will be sent directly from MRDED-L to the laboratory. This copy will be sent out two weeks after the reports to the District, and is an information copy only. It will not be accompanied by instructions of any kind.

(2) Water/environmental analysis. Inspection reports will be addressed to the District coordinator for distribution. An information copy of the report will be sent to appropriate MRD offices.

11. Action Required.

a. Correction of Deficiencies.

(1) Commercial laboratories. The inspection report will be forwarded by the Area or Resident Engineer to the contractor with instructions to have the deficiencies corrected and advise in writing when accomplished. Project personnel should then verify that corrections have actually been made. MRDED-L technical assistance is available by telephone, if questions regarding correction arise.

(2) Government project laboratories. Correction of deficiencies will be accomplished directly by the individual in charge of testing.

(3) Contractor-operated project laboratories. Correction may handled formally (by letter) or informally according to the number or importance of the deficiencies.

(4) When the number of deficiencies is excessive or the deficiencies are sufficiently serious in nature, reinspection by MRDED-L should be requested.

(5) After correction of deficiencies has been verified, the District Commander will forward a reply to MRDCO who will, in turn, inform MRDED-L.

b. Inspection of parent laboratory. In some cases a branch laboratory will do only basic testing, and send the remainder to the parent laboratory. In these instances, the parent lab should also be inspected by MRDED-L. Since this situation usually will not be known before inspecting the branch lab, a recommendation for inspection of the parent lab will be made by the MRDED-L inspector after visiting the branch.

c. Tests not being performed. On occasion, tests required by the contract specifications have not been performed by the designated testing facility. When this situation is recognized, the inspection report will note the tests omitted. The laboratory that is to perform these tests should be determined, and an inspection requested, if considered necessary.

d. Disapproval.

(1) A testing facility should be disapproved when:

(a) The volume of testing required exceeds the resources of the laboratory. Equipment can usually be obtained readily, but experienced testing people are generally not immediately available. If it is apparent that the staff would consist of a high percentage of inexperienced personnel, the testing facility should be disapproved.

(b) An excessive number of major deficiencies is found. This indicates a lack of adequate internal quality control.

(c) Previous performance has been unsatisfactory, and the conditions are essentially unchanged.

(2) The MRDED-L inspection report will recommend disapproval when, in the opinion of the inspector, the required services cannot be satisfactorily provided.

(3) The District should refrain from approving the facility until adequate measures have been taken to correct previous deficiencies, and the required services provided are satisfactory.

(4) After a facility has been disapproved, it should be reinspected by MRDED-L before it is used again.

12. Procurement of Testing Services. When District, Area, or Project Offices consider procurement of testing services from a commercial laboratory, they will submit their justification through channels to the Division Commander, ATTN: MRDED-L, for review. A copy of the proposed contract should accompany this justification. When procurement is authorized by the Division Commander in accordance with Reference 3b, the purchase order for commercial laboratory testing will include the statement that an inspection may be made by MRDED-L. Minor testing requirements, such as occasional density tests, may be covered by a blanket approval.

13. Comments.

a. Inspection of a testing facility reveals only the conditions existing at the time of inspection. Commercial laboratories often have a frequent turnover in personnel, and sometimes move equipment among branches.

b. An inspection will establish only the ability to comply with prescribed procedures. The presence of the required equipment and expertise does not guarantee that it will be applied correctly.

c. The inspection of a testing facility should not lead to a false sense of security. Project personnel should not accept poor testing practice or fail to question suspicious test results merely because the facility has been inspected.

FOR THE COMMANDER:

/s/
DONALD M. HARRIS
Colonel, Corps of Engineers
Deputy Commander

1 Encl
APP A

Distribution:
B
D
Rock Island - 15
St. Paul - 15

APPENDIX A

Laboratory Inspection Procedure

1. Purpose. This appendix is an outline of the procedure generally followed in conducting the inspection of a materials testing laboratory.

2. Preliminary information. Testing facilities will be inspected for the ability to comply with the specific test methods stated in the contract or contracts under which the testing services are provided.

a. Prior to the inspection the contract specifications are searched for all test methods to be inspected. This requires checking each section of the specifications for the tests actually required. The proper issue of the specific test method must be used.

b. MRDED-L maintains a prepared work sheet for each test method. After listing the tests required, the work sheets are assembled into an inspection package.

3. Initial contact.

a. In the case of a commercial laboratory, the MRDED-L will telephone the laboratory and arrange a time for inspection. This is necessary to insure that the 6 to 8 hours required will not interfere unduly with the laboratory's schedule and that key personnel are available.

b. For Government and Contractor-operated project facilities, inspection will be arranged by the District Coordinator.

4. Preliminary interview. On arrival at the laboratory the inspector will interview the individual in charge.

a. Explain the purpose of the inspection, outline the procedure, and provide assurance that information obtained will not be passed on to competitors.

b. Obtain background information regarding length of time in business, number of employees, type of services offered, and other information useful in evaluating potential performance of services required.

5. Reference material. The availability of required references will be determined. References may include ASTM, AASHTO, EM 1110-2-1906, MIL-STD-620 and 621, MRD Handbook, and most importantly the contract specifications or an excerpt of the test methods.

6. Equipment and procedures. The equipment for each test will be inspected for compliance with the test method, and the technician who normally performs the test will be asked to demonstrate or describe the procedure in sufficient detail to determine compliance. Deficiencies observed will be pointed out as they are found.

a. Balances will be checked for accuracy to the extent of the test weights carried, about 330 grams. Balances and scales will be checked for wear, binding, etc. for their full range.

b. Testing machines, proving rings, etc. will not be calibrated by MRDED-L. Current calibration by an acceptable firm or agency is considered adequate. The calibration curves will be examined for compliance with the prescribed tolerance.

7. Personnel. The educational and experience background related to testing will be requested for the individual in charge, the laboratory supervisor, and key technicians.

8. Exit interview. Before leaving the facility the inspector will review the deficiencies with the individual in charge. An estimated time for correction of deficiencies will be requested and included in the report.

9. Reporting. A separate formal report will be prepared for each testing facility inspected as soon as possible after return to MRDED-L.

10. Comments. Certain tests such as sand-cone density, sieve analysis, slump, air content, and making, curing, and testing concrete cylinders are common to most of the contracts for which inspections are made. These tests will be included routinely whether required or not.

11. Water and wastewater testing. MRDED-L inspection of water testing laboratories has been in progress for a much shorter period than materials testing laboratories, and the details of inspection are less well defined. However, the procedure is similar for both types of laboratories.